

	A	B	C	D	E	F	G	H	I	J	K	L
1	User Selected Options			Background Statistics for Data Sets with Non-Detects								
2												
3	Date/Time of Computation			7/30/2013 1:14:58 PM								
4	From File			WorkSheet.xls								
5	Full Precision			OFF								
6	Confidence Coefficient			95%								
7	Coverage			95%								
8	rent or Future K Observations			1								
9	mber of Bootstrap Operations			2000								
10												
11	PAHs											
12												
13	General Statistics											
14	Total Number of Observations				71	Number of Missing Observations					0	
15	Number of Distinct Observations				68							
16	Number of Detects				60	Number of Non-Detects					11	
17	Number of Distinct Detects				60	Number of Distinct Non-Detects					8	
18	Minimum Detect				6.12	Minimum Non-Detect					1.5	
19	Maximum Detect				464.5	Maximum Non-Detect					10	
20	Variance Detected				7048	Percent Non-Detects					15.49%	
21	Mean Detected				90.37	SD Detected					83.96	
22	Mean of Detected Logged Data				4.165	SD of Detected Logged Data					0.869	
23												
24	Critical Values for Background Threshold Values (BTVs)											
25	Tolerance Factor K (For UTL)				1.983	d2max (for USL)					3.089	
26												
27	Normal GOF Test on Detects Only											
28	Shapiro Wilk Test Statistic				0.742	Normal GOF Test on Detected Observations Only						
29	5% Shapiro Wilk P Value				1.122E-13	Data Not Normal at 5% Significance Level						
30	Lilliefors Test Statistic				0.169	Lilliefors GOF Test						
31	5% Lilliefors Critical Value				0.114	Data Not Normal at 5% Significance Level						
32	Data Not Normal at 5% Significance Level											
33												
34	Kaplan Meier (KM) Background Statistics Assuming Normal Distribution											
35	Mean				76.64	SD					82.98	
36	95% UTL95% Coverage				241.2	95% KM UPL (t)					215.9	
37	90% KM Percentile (z)				183	95% KM Percentile (z)					213.1	
38	99% KM Percentile (z)				269.7	95% KM USL					333	
39												
40	DL/2 Substitution Background Statistics Assuming Normal Distribution											
41	Mean				76.69	SD					83.53	
42	95% UTL95% Coverage				242.3	95% UPL (t)					216.9	
43	90% Percentile (z)				183.7	95% Percentile (z)					214.1	
44	99% Percentile (z)				271	95% USL					334.7	
45	DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons											
46												
47	Gamma GOF Tests on Detected Observations Only											
48	A-D Test Statistic				0.458	Anderson-Darling GOF Test						
49	5% A-D Critical Value				0.767	ected data appear Gamma Distributed at 5% Significance Lev						
50	K-S Test Statistic				0.0733	Kolmogrov-Smirnoff GOF						
51	5% K-S Critical Value				0.117	ected data appear Gamma Distributed at 5% Significance Lev						
52	Detected data appear Gamma Distributed at 5% Significance Level											
53												
54	Gamma Statistics on Detected Data Only											
55	k hat (MLE)				1.62	k star (bias corrected MLE)					1.551	
56	Theta hat (MLE)				55.77	Theta star (bias corrected MLE)					58.28	
57	nu hat (MLE)				194.5	nu star (bias corrected)					186.1	
58	MLE Mean (bias corrected)				90.37							
59	MLE Sd (bias corrected)				72.58	95% Percentile of Chisquare (2k)					7.989	
60												
61	Gamma ROS Statistics using Imputed Non-Detects											
62	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											

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63	GROS may not be used when kstar of detected data is small such as < 0.1													
64	For such situations, GROS method tends to yield inflated values of UCLs and BTVs													
65	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates													
66	Minimum					0.01	Mean					76.37		
67	Maximum					464.5	Median					59		
68	SD					83.82	CV					1.097		
69	k hat (MLE)					0.426	k star (bias corrected MLE)					0.417		
70	Theta hat (MLE)					179.3	Theta star (bias corrected MLE)					183		
71	nu hat (MLE)					60.48	nu star (bias corrected)					59.25		
72	MLE Mean (bias corrected)					76.37	MLE Sd (bias corrected)					118.2		
73	95% Percentile of Chisquare (2k)					3.417	90% Percentile					214.1		
74	95% Percentile					312.7	99% Percentile					559.6		
75	The following statistics are computed using Gamma ROS Statistics on Imputed Data													
76	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods													
77						WH	HW						WH	HW
78	Approx. Gamma UTL with 95% Coverage					361.4	475.2	95% Approx. Gamma UPL					284.4	353.4
79	95% Gamma USL					756.8	1196							
80														
81	The following statistics are computed using gamma distribution and KM estimates													
82	Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods													
83	k hat (KM)					0.853	nu hat (KM)					121.1		
84						WH	HW						WH	HW
85	Approx. Gamma UTL with 95% Coverage					304	344.2	95% Approx. Gamma UPL					245.5	268.8
86	95% Gamma USL					594.4	757.9							
87														
88	Lognormal GOF Test on Detected Observations Only													
89	Lilliefors Test Statistic					0.0869	Lilliefors GOF Test							
90	5% Lilliefors Critical Value					0.114	Detected Data appear Lognormal at 5% Significance Level							
91	Detected Data appear Lognormal at 5% Significance Level													
92														
93	Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects													
94	Mean in Original Scale					77.97	Mean in Log Scale					3.879		
95	SD in Original Scale					82.42	SD in Log Scale					1.045		
96	95% UTL95% Coverage					384.2	95% BCA UTL95% Coverage					346.1		
97	95% Bootstrap (%) UTL95% Coverage					375.3	95% UPL (t)					279.6		
98	90% Percentile (z)					184.6	95% Percentile (z)					269.9		
99	99% Percentile (z)					550.4	95% USL					1222		
100														
101	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution													
102	KM Mean of Logged Data					3.593	95% KM UTL (Lognormal)95% Coverage					796.6		
103	KM SD of Logged Data					1.557	95% KM UPL (Lognormal)					496.2		
104	95% KM Percentile Lognormal (z)					470.8	95% KM USL (Lognormal)					4461		
105														
106	Background DL/2 Statistics Assuming Lognormal Distribution													
107	Mean in Original Scale					76.69	Mean in Log Scale					3.6		
108	SD in Original Scale					83.53	SD in Log Scale					1.567		
109	95% UTL95% Coverage					818.8	95% UPL (t)					508.4		
110	90% Percentile (z)					272.9	95% Percentile (z)					482.2		
111	99% Percentile (z)					1403	95% USL					4638		
112	DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.													
113														
114	Nonparametric Distribution Free Background Statistics													
115	Data appear to follow a Discernible Distribution at 5% Significance Level													
116														
117	Nonparametric Uppper Limits for BTVs(no distinction made between detects and nondetects)													
118	Order of Statistic, r					70	95% UTL with95% Coverage					406		
119	Approximate f					1.842	Confidence Coefficient (CC) achieved by UTL					0.876		
120	95% UPL					233.4	95% USL					464.5		
121	95% KM Chebyshev UPL					440.9								
122														
123	Note: The use of USL to estimate a BTV is recommended only when the data set represents a background													
124	data set free of outliers and consists of observations collected from clean unimpacted locations.													

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125	The use of USL tends to provide a balance between false positives and false negatives provided the data											
126	represents a background data set and when many onsite observations need to be compared with the BTV.											
127												